

NOTES ON SOME POINTS CONNECTED WITH THE PROGRESS
OF ASTRONOMY DURING THE PAST YEAR.

Minor Planets.

The following 117 planets have been discovered or first announced during 1908. The year of discovery is 1908 unless otherwise noted.

Letter and Number.	Date.	Discoverer.	Letter and Number.	Date.	Discoverer.	Letter and Number.	Date.	Discoverer.
BM 654	Jan. 4	K	CL ^a ...	Feb. 24	M ₁	DM ...	July 23	K
BN ...	3	W	CM ...	28	M ₁	DN ...	23	K
BO ...	3	K	CN ...	Mar. 3	M ₁	DO ...	27	K
BP ...	5	S	CO ...	3	M ₁	DP ...	Aug. 20	K
BQ ..	5	W	CP ...	3	M ₁	DQ ...	20	K
BR ...	12	K	CQ ...	22	W	DR ...	20	K
BS 655	12	K	CR ...	23	W	DS ...	22	K
BT ...	12	K	CS 659	23	W	DT ...	24	M ₂
BU 656	22	K	CT ...	24	W	DU ...	Aug. 30	M ₁
BV 657	24	K	CU ...	25	W	DO ^a ...	July 30	M ₁
BW 658	24	K	CV ...	Feb. 8	H	DT ^a ...	Aug. 28	M ₁
BY ...	24	K	CW ...	Mar. 30	M ₁	DV ...	Sept. 21	P
BZ ...	8	M ₁	CX ...	Apr. 4	M ₁	DW ...	21	P
CA ...	8	M ₁	CY ...	4	M ₁	DX ...	21	K
CB ...	8	M ₁	CZ ...	Apr. 6	M ₁	DY ...	21	K
CC ...	8	M ₁	DA ...	20	M ₁	DZ ...	21	K
OV ^a '04	Sept. 12	B	DB ...	24	M ₁	EA ...	21	K
CD ...	Jan. 30	M ₁	DC ...	26	M ₁	EB ...	21	K
CE ...	30	M ₁	DD ...	26	M ₁	EC ...	30	K
CE ^a ...	30	M ₁	DE ...	May 29	K	ED ...	30	K
CF ...	Feb. 4	M ₁	DF ...	June 6	M ₁	EE ..	Oct. 1	L
CG ...	4	M ₁	DG ...	24	K	EF ...	2	K
CH ...	4	M ₁	DH ...	24	K	EG ...	6	K
CK ...	Mar. 3	W	DJ ...	25	K	EH ...	6	K
CL ...	Feb. 22	M ₁	DK ...	July 22	L	EJ ...	Sept. 30	M ₁

Letter and Number.	Date.	Discoverer.	Letter and Number.	Date.	Discoverer.	Letter and Number.	Date.	Discoverer.
EK ...	Oct. 4	M ₁	EY ...	Nov. 29	K	ZW ^c	'07 Sept. 6	M ₁
EL ...	27	K	EZ ...	Dec. 17	D	ZW ^d	'07 Sept. 6	M ₁
EM ...	27	K	FA ...	16	L	AF ^a	'07 Sept. 12	M ₁
EN ...	27	K	FB ...	16	K	AN ^a	'07 Oct. 8	M ₁
EO ...	27	K	FC ...	16	K	AN ^b	'07 Oct. 10	M ₁
EP ...	28	L	FD ...	16	K	AN ^c	'07 Oct. 10	M ₁
EQ ...	28	K	FE ...	16	K	AN ^d	'07 Oct. 10	M ₁
ER ...	Nov. 1	K	FF ...	16	K	AN ^e	'07 Oct. 30	M ₁
ES ...	1	K	FG ...	16	K	AN ^f	'07 Oct. 30	M ₁
ET ...	27	K	FH ...	31	W	AN ^g	'07 Oct. 30	M ₁
EU ...	27	K	FJ ...	31	W	AN ^h	'07 Oct. 30	M ₁
EV ...	28	K	FK ...	31	K	AN ^j	'07 Oct. 30	M ₁
EW ...	28	W	ZW ^a	'07 Sept. 6	M ₁	AN ^k	'07 Oct. 30	M ₁
EX ...	28	K	ZW ^b	'07 Sept. 6	M ₁	BJ ^a	'07 Dec. 8	M ₁

The initials stand for : B=Prof. Barnard, Yerkes Observatory ; D=Mr Davidson, Greenwich ; H=S. Hirayama, Tokio ; K=Herr Kopff, Heidelberg ; L=Herr Lorenz, Heidelberg ; M₁=Dr. Metcalf, Taunton, Mass. ; M₂=Mr Melotte, Greenwich ; P=Dr. Palisa, Vienna ; W=Prof. Wolf, Heidelberg.

The following planets, not numbered at the date of the last report, have since received permanent numbers : XP 636, YE 637, ZQ 638, ZT 639, ZW 640, ZX 641, ZY 642, ZZ 643, AA 644, AB 645 (subsequently this planet was found to be identical with 398 Admete), AC 646, AD 647, AE 648, AF 649, AM 650, AN 651, AU 652, BK 653 ; 652 has been named Jubilatrix, 654 Zelinda.

YD is identical with 465 Alekto, 653 with 1893 D, AH with 357 Ninina, BX with 615, BL with 198 Ampella, CJ is the eighth satellite of Jupiter, DL is identical with 421 Zahringia ; YH is *not* identical with 236 Honoria, as was stated last year. EA was independently found by M₁ on September 20, and is probably identical with 603 ; EE may be 595. BN, EW, EZ, FH, FJ were discovered in the course of the photographic search for Halley's Comet : all except EZ were very faint objects. OV^a was observed while searching for Phœbe.

Dr. M. Ebell gives in *Ast. Nach.* 4285 a list of planets photographed at Arequipa between 1898 and 1901 ; in the list 17 appear as known planets and 47 as unknown ones, but one of the latter was subsequently found to be identical with 643 discovered in 1907.

The interesting planets 475 Ocllo and 624 Hector were re-observed last year, and another planet, 659, has been found belong-

ing to the Jupiter group, its heliocentric longitude being 55° greater than his. The following elements are by Dr. Ebell:—

Epoch 1908 March 23^h 5, Berlin M.T.

$$\begin{array}{ll} M = 240^\circ 38' 5'' & \phi = 6^\circ 23' 59'' \\ \omega = 327^\circ 31' 28'' & \mu = 300'' \cdot 785 \\ \begin{array}{l} \varpi = 349^\circ 57' 42'' \\ i = 4^\circ 31' 15'' \end{array} \left. \vphantom{\begin{array}{l} \varpi \\ i \end{array}} \right\} 1908 \cdot 0. & \log a = 0 \cdot 714500 \end{array}$$

Mr. F. J. Linders, of the Lund Observatory, has made some researches on the motion of planets which nearly conform to the equilateral configuration with the Sun and Jupiter.* He finds that the instantaneous mean motion of such planets may vary from $291'' \cdot 6$ to $306'' \cdot 6$, and that the departure from the equilateral point may amount to $17^\circ \cdot 3$ in either direction. There can now be no reasonable doubt that the 4 planets, 588 Achilles, 617 Patroclus, 624 Hector, and 659, do conform to this type of motion, and oscillate about the Lagrange equilateral configuration.

Ast. Nach. 4249 contains an article by Herr P. Guthnick on the variation in brightness of Eros in 1907. The light-changes seem to have been unexpectedly small as compared with those in 1901. The suggestion that the variation depends on the phase-angle is confirmed.

We learn from *Publications of the Astronomical Society of the Pacific*, vol. xx., No. 119, that the work being done at the Berkeley Astronomical Department, University of California, on the minor planets discovered and endowed by Watson, is on the point of completion.

Tables for the following planets are nearly or quite ready: 79, 93, 94, 100, 101, 103, 104, 105, 106, 115, 119, 121, 128, 133, 139, 150, 161, 168, 174, 175, 179. Of these, the 3 planets 106, 168, 175 have approximately half the period of Jupiter; the tables of these follow Böhlin's method.

One Watson planet, 132 Aethra, is lost: it was at first thought that 654 Zelinda was identical with it, but this has not been confirmed.

In addition to 132 Aethra, it may be of interest to give the list of planets (from Nos. 1 to 500) that have not been seen since the year of their discovery, and must be regarded as lost: 99, 155, 193, 220, 285, 290, 293, 309, 310, 315, 316, 323, 330, 353, 368, 392, 396, 400, 413, 414, 428, 430, 448, 452, 457, 459, 461, 463, 464, 467, 473, 474, 486, 489, 493, 495, 496, 497, 499.

A. C. D. C.

Satellites.

At the end of February 1908 Mr. Melotte, while making a scrutiny of the plates of the region round Jupiter taken at the Royal Observatory, Greenwich, discovered an object of the 17th magnitude, which was moving at nearly the same rate as Jupiter.

* *Arkiv för Matematik, Astronomi och Fysik*, utgifvet af K. Svenska Vetenskapsakademien i Stockholm, Band 4, No. 20.